

INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)

PCT/EP2004/004175

Re Point V

Reasoned statement with regard to novelty, inventive step and industrial applicability; citations and explanations supporting this statement

1. Reference is made to the following documents:

D1: US 2002/009361 A1 (REICHERT ARND ET AL) January 24, 2002

D2: DE 23 57 881 A (MANNESMANN MEER AG) May 22, 1975

D3: US-A-4 915 510 (ARVIDSSON THOMAS) April 10, 1990

D4: US-A-4 544 285 (GRAHAM II RICHARD W ET AL) October 1, 1985

2. Document D1 is considered to be the nearest prior art with respect to the subject matter of claim 1. It discloses (the references in brackets relate to this document):

a bearing (1) (see figures 1-5) for axially mounting a rotor (2) of a gas turbine (19), having a rotationally fixed bearing body (see figure 2) which has a hydraulic piston arrangement (4, 5) (see page 5, lines 21-24) for axially displacing the rotor (2) from a first operating position into a second operating position, and having a hydraulic system (12) fluidically connected to the hydraulic piston arrangement (4, 5).

The subject matter of claim 1 therefore differs from the known bearing by virtue of the fact that at least one restrictor arranged in the bearing body and intended for

the hydraulic medium is provided between the hydraulic piston arrangement and the hydraulic system.

The subject matter of claim 1 is therefore novel (Article 33(2) PCT).

The object of the present invention can therefore be seen in providing a bearing which absorbs the bearing forces occurring as a result of high dynamic thrusts of the rotor and ensures reliable mounting of the rotor.

The solution proposed in claim 1 of the present application for achieving this object is based on an inventive activity for the following reasons (Article 33(3) PCT):

Owing to the fact that a restrictor is interposed according to the invention, the hydraulic medium displaced by the individual pistons is first of all directed through the restrictor, a factor which advantageously leads to a reduction in the kinetic energy and to a comparatively slow displacement of the rotor. The loads acting on the bearing body can thus be reduced, whereby the risk of overloading is minimized. Even at a maximum force acting on the rotor, kinetic energy can be sufficiently dissipated by the restrictor arranged between hydraulic piston arrangement and hydraulic system, so that overloading of the bearing as a result of dynamic forces of the rotor is prevented. Reliable mounting of the rotor of the gas turbine is thus ensured even during any possible occurrence of high dynamic thrust forces.

A restrictor arranged between hydraulic piston arrangement and hydraulic system is known from document D4. However, this does not solve the abovementioned

problem and therefore the person skilled in the art could obtain no hint from D4 as to how to modify the arrangement of document D1 in accordance with the present invention. No hint as to how to solve the problem nor the inventive feature can be gathered from the other citations D2 and D3, so that even their combination with D1 in no way leads to the inventive solution.

3. Claims 2-10 are independent of claim 1 and thus likewise fulfill the requirements of the PCT with regard to novelty and inventive step.